

NOVEMBER/DECEMBER 2025

**23PCH12 — STRUCTURE AND BONDING
IN INORGANIC COMPOUNDS**

Time : Three hours

Maximum : 75 marks



SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State Wade's rule.
2. What is the effect of lone pairs on molecular geometry?
3. Illustrate the radius ratio of the ionic crystal.
4. Outline the application of Kapustinski equation.
5. Identify the coordination number in zinc blende. Draw its structures.
6. Explain inverse spinel with example.
7. Which rays are used in the powder XRD method of crystals?

8. Examine the major difference between TEM and SEM.
9. List two consequences of metal excess defects.
10. Analyse the effect of linear defects due to dislocations.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) How does Bent's rule affect Molecular Structure?

Or

- (b) Discuss the bonding features of Borazine.

12. (a) Summarize about Bravais lattices.

Or

- (b) Explain the followings: (i) point group
(ii) space group.

13. (a) Examine the structure of Rutile.

Or

- (b) Predict the structure of perovskite.

14. (a) Illustrate the principle of electron diffraction methods.

Or

- (b) Evaluate the interpretation of XRD data.

15. (a) Compare intrinsic and extrinsic semiconductors.

Or

- (b) Outline Lasers and its applications.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Classify the various types of silicates.
17. Elaborate symmetry operations in crystals.
18. Formulate the structural features of zinc blende and cadmium iodide.
19. Discuss about the principle and instrumentation of powder diffraction method
20. Examine the points defects in solids.

